IN THE CLAIMS:

Claim 1. (Original) A method of determining a current in an electric machine coupled to a polyphase bus, the method comprising:

detecting a rotational position of said electric machine with a position encoder coupled to said electric machine;

controlling an inverter comprising a plurality of switching devices, said inverter having an input coupled to a direct current bus, and an output coupled to said polyphase bus, said inverter responsive to commands from a controller coupled to said inverter and to said position encoder;

measuring a current from said direct current bus; and

capturing said current at a predefined interval of time.

Claim 2. (Original) The method of Claim 1 further comprising:

determining a set of values representative of a magnitude of currents on each phase of said polyphase bus.

Claim 3. (Original) The method of Claim 2 wherein said predefined interval of time is established when:

said electric machine is within a predefined rotational angle;

a predefined combination of said switching devices are active; and

an angle between a phase voltage and a corresponding phase current on each phase of said polyphase bus being within a range of about minus thirty to about thirty degrees.

Claim 4. (Original) The method of Claim 1 further comprising:

determining a value representative of a torque current from said current.

Claim 5. (Original) The method of Claim 4 wherein said predefined interval of time is established when:

a particular back EMF voltage waveform for a given phase of said electric machine attains its peak value;

said electric machine is within a predefined rotational angle;

a predefined combination of said switching devices are active; and

an angle between a phase voltage and a corresponding back EMF on each phase of said polyphase bus being within a range of about minus thirty to about thirty degrees.

Claim 6. (Original) The method of Claim 1 wherein said electric machine comprises a permanent magnetic motor and said position encoder includes a rotor position sensor.

Claim 7. (Original) The method of Claim 1 wherein said electric machine is a permanent magnet DC brushless motor characterized by a sinusoidal magnetic field excitation.

Claim 8. (Original) The method of Claim 1 wherein said capturing is characterized by sampling a signal value representative of said current and said sampling is controlled by said controller to be operative only at said predefined interval of time.

Claim 9. (Original) A system for determining a current in an electric machine coupled to a polyphase bus, the system comprising:

a position encoder coupled to said electric machine to detect rotational position;

an inverter having an input coupled to a direct current bus, and an output coupled to said polyphase bus, responsive to commands from a controller;

said controller coupled to said inverter and to said position encoder;

a sensor to detect a current from said direct current bus; and

wherein said sensor captures said current at a predefined interval of time.

Claim 10. (Original) The system of Claim 9 wherein said controller determines a set of values representative of a magnitude of currents on each phase of said polyphase bus.

Claim 11. (Original) The system of Claim 10 wherein said predefined interval of time is established when:

said electric machine is within a predefined rotational angle;

a predefined combination of said switching devices are active; and

an angle between a phase voltage and a corresponding phase current on each phase of said polyphase bus being within a range of about minus thirty to about thirty degrees.

Claim 12. (Original) The system of Claim 9 wherein said controller determines a value representative of a torque current from said current.

Claim 13. (Original) The system of Claim 12 wherein said predefined interval of time is established when:

a particular back EMF voltage waveform for a given phase of said electric machine attains its peak value;

said electric machine is within a predefined rotational angle;

a predefined combination of said switching devices are active; and

an angle between a phase voltage and a corresponding back EMF on each phase of said polyphase bus being within a range of about minus thirty to about thirty degrees.

Claim 14. (Original) The system of Claim 9 wherein said electric machine comprises a permanent magnetic motor and said position encoder includes a rotor position sensor.

Claim 15. (Original) The system of Claim 9 wherein said electric machine is a permanent magnet DC brushless motor characterized by a sinusoidal magnetic field excitation.

Claim 16. (Original) The system of Claim 9 wherein said inverter is comprised of switching devices coupled to and responsive to commands from said controller.

Claim 17. (Original) The system of Claim 9 wherein said capturing is characterized by sampling a signal value representative of said current and said sampling is controlled by said controller to be operative only at said predefined interval of time.

Claim 18. (Original) A storage medium encoded with a machine-readable computer program code for determining a current in an electric machine coupled to a polyphase bus, said storage medium including instructions for causing controller to implement a method comprising:

detecting a rotational position of said electric machine with a position encoder coupled to said electric machine;

controlling an inverter comprising a plurality of switching devices, said inverter having an input coupled to a direct current bus, and an output coupled to said polyphase bus, said inverter responsive to commands from a controller coupled to said inverter and to said position encoder;

measuring a current from said direct current bus; and

capturing said current at a predefined interval of time.

Claim 19. (Original) The storage medium of Claim 18 further including instructions for causing said controller to perform said method further comprising:

determining a set of values representative of a magnitude of currents on each phase of said polyphase bus.

Claim 20. (Original) The storage medium of Claim 19 wherein said predefined interval of time is established when:

said electric machine is within a predefined rotational angle;

a predefined combination of said switching devices are active; and

an angle between a phase voltage and a corresponding phase current on each phase of said polyphase bus being within a range of about minus thirty to about thirty degrees.

Claim 21. (Original) The storage medium of Claim 18 further including instructions for causing said controller to perform said method further comprising:

determining a value representative of a torque current from said current.

Claim 22. (Original) The storage medium of Claim 21 wherein said predefined interval of time is established when:

a particular back EMF voltage waveform for a given phase of said electric machine attains its peak value;

said electric machine is within a predefined rotational angle;

a predefined combination of said switching devices are active; and

an angle between a phase voltage and a corresponding back EMF on each phase of said polyphase bus being within a range of about minus thirty to about thirty degrees.

Claim 23. (Original) The storage medium of Claim 18 wherein said electric machine comprises a permanent magnetic motor and said position encoder includes a rotor position sensor.

Claim 24. (Original) The storage medium of Claim 18 wherein said electric machine is a permanent magnet DC brushless motor characterized by a sinusoidal magnetic field excitation.

Claim 25. (Original) The storage medium of Claim 18 wherein said capturing is characterized by sampling a signal value representative of said current and said sampling is controlled by said controller to be operative only at said predefined interval of time.

Claim 26. (Original) A computer data signal embodied in a carrier wave for determining a current in an electric machine coupled to a polyphase bus, said data signal comprising code configured to cause a controller to implement a method comprising:

detecting a rotational position of said electric machine with a position encoder coupled to said electric machine;

controlling an inverter comprising a plurality of switching devices, said inverter having an input coupled to a direct current bus, and an output coupled to said polyphase bus, said inverter responsive to commands from a controller coupled to said inverter and to said position encoder;

measuring a current from said direct current bus; and

capturing said current at a predefined interval of time.

Claim 27. (Original) The computer data signal of Claim 26 further comprising code configured to cause a controller to implement said method further comprising:

determining a set of values representative of a magnitude of currents on each phase of said polyphase bus.

Claim 28. (Original) The computer data signal of Claim 27 wherein said predefined interval of time is established when:

said electric machine is within a predefined rotational angle;

a predefined combination of said switching devices are active; and

an angle between a phase voltage and a corresponding phase current on each phase of said polyphase bus being within a range of about minus thirty to about thirty degrees.

Claim 29. (Original) The computer data signal of Claim 26 further comprising code configured to cause a controller to implement said method further comprising:

determining a value representative of a torque current from said current.

Claim 30. (Original) The computer data signal of Claim 29 wherein said predefined interval of time is established when:

a particular back EMF voltage waveform for a given phase of said electric machine attains its peak value;

said electric machine is within a predefined rotational angle;

a predefined combination of said switching devices are active; and

an angle between a phase voltage and a corresponding back EMF on each phase of said polyphase bus being within a range of about minus thirty to about thirty degrees.

Claim 31. (Original) The computer data signal of Claim 26 wherein said electric machine comprises a permanent magnetic motor and said position encoder includes a rotor position sensor.

Claim 32. (Original) The computer data signal of Claim 26 wherein said electric machine is a permanent magnet DC brushless motor characterized by a sinusoidal magnetic field excitation.

Claim 33. (Original) The computer data signal of Claim 26 wherein said capturing is characterized by sampling a signal value representative of said current and said sampling is controlled by said controller to be operative only at said predefined interval of time.